

WHAT IS CLAIMED IS:

- 1 1. A method for selecting trees according to a predetermined criterion, comprising the
2 steps of :
 - 3 a) applying a vibrative member to the tree, the vibrative member being characterized
4 by mechanical vibration resonance properties;
 - 5 b) vibrating the vibrative member;
 - 6 c) determining the resonance properties of the vibrative member;
 - 7 d) calculating an observed quality factor associated with the vibrative member
8 vibrations; and,
 - 9 e) comparing the observed quality factor with a predetermined relationship between
10 the quality factor and the tree selection criterion.
- 1 2. The method of claim 1 wherein the vibrative member has a wood-penetrating end
2 portion characterized by at least one resonance frequency of mechanical vibration.
- 1 3. The method of claim 2 wherein the step of applying the vibrative member to the
2 tree comprises embedding the wood-penetrating end portion of the vibrative member into a
3 trunk portion of the tree.
- 1 4. The method of claim 2 wherein the vibrative member is fabricated from a metal
2 selected from the group consisting of stainless steel, steel alloys, aluminum and non-ferrous
3 alloys.
- 1 5. The method of claim 2 wherein the vibrative member is fabricated from a material
2 selected from the group consisting of ceramic and plastic.

1 6. The method of claim 1 wherein the tree selection criterion is dependent upon the
2 maturity of the tree.

1 7. The method of claim 2 wherein the resonance properties of the vibrative member
2 include the at least one resonance frequency of the wood-penetrating end portion and a
3 resonance bandwidth.

1 8. The method of claim 2 wherein the wood-penetrating end portion includes at least
2 one prong.

1 9. The method of claim 2 wherein the wood penetrating end portion includes two
2 prongs.

1 10. The method of claim 9 wherein the two prongs are each characterized by a
2 different resonance frequency.

1 11. A tree probe comprising:

2 a) a vibrative member having a wood-penetrating end portion characterized by at least
3 one resonance frequency of mechanical vibration;

4 b) means for vibrating the vibrative member at about the resonance frequency of the
5 wood-penetration end portion; and,

6 c) means for measuring vibration amplitude across a frequency range sufficient to
7 determine a characteristic Q value.

1 12. The tree probe of claim 11 wherein the wood penetrating end portion includes at
2 least one prong.

1 13. The tree probe of claim 11 wherein the wood penetrating end portion includes two
2 prongs.

1 14. The tree probe of claim 13 wherein the two prongs are each characterized by a
2 different resonance frequency.

1 15. The tree probe of claim 11 wherein the vibrative member is fabricated from a
2 metal selected from the group consisting of stainless steel, steel alloys, aluminum and non-
3 ferrous alloys.

1 16. The method of claim 11 wherein the vibrative member is fabricated from a
2 material selected from the group consisting of ceramic and plastic.

1 17. The tree probe of claim 15 wherein the vibrative member is a unitary single piece
2 member.

1 18. The tree probe of claim 16 wherein the vibrative member is a unitary single piece
2 member.

1 19. The tree probe of claim 11 wherein the means for vibrating the vibrative member
2 comprises a piezoelectric transducer attached to the vibrative member and means for
3 supplying the piezoelectric transducer with an alternating current at about the resonance
4 frequency of the wood penetration end portion of the vibrative member.

1 20. The tree probe of claim 19 wherein the means for supplying an alternating current
2 includes a tunable sine wave or square wave generator.

1 21. The tree probe of claim 11 wherein the means for measuring vibration amplitude
2 includes an accelerometer attached to the vibrative member.

1 22. The tree probe of claim 11 wherein the means for vibrating the vibrative member
2 comprises a piezoelectric transducer attached to the vibrative member and means for
3 supplying the piezoelectric transducer with an alternating current at about the resonance
4 frequency of the wood penetration end portion of the vibrative member and wherein the
5 means for measuring vibration amplitude includes an accelerometer attached to the vibrative
6 member.